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10/574,801	04/05/2006	Katsurou Nagaoka	1019519-000516	2052

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EXAMINER	
ROBINSON, ELIZABETH A	

ART UNIT	PAPER NUMBER
1773	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/574,801	NAGAOKA ET AL.	
	Examiner	Art Unit	
	Elizabeth Robinson	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *04-05-2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1-8 and 12-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 states the limitation "...a coating amount of the silicone resin is from 0.4 to 45 mg/m^2." It is unclear if this is just the silicone portion of the resin and it is also unclear if this coating density is for the cured or uncured resin. Claims 2-8 and 12-14 all depend from claim 1 and are thus rendered indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 9-11 and 15 are rejected under 35 U.S.C. 102(a) as being anticipated by Hayashida et al. (WO/2003/100777). The Examiner is using US 7,153,558 (hereafter referred to as Hayashida '558) as the English language equivalent of the World document. Applicant cannot rely upon the foreign priority papers to overcome this

rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Regarding claims 9, 10 and 15, Hayashida '558 (Column 4, lines 39-65) teaches an optical recording media, which is capable of reproducing an information signal. The optical recording medium comprises the following layers in this order: substrate layer (2), recording layer (5), light transmitting layer (8) and hard coat layer (9). The hard coat layer is formed by coating and curing an actinic energy curing resin that comprises a reactive silicone (B) (Column 7, lines 54-63). Hayashida '558 (Column 9, lines 12-29) teaches that the reactive silicone can be one of formulas 1 to 3 and that it is preferred that the silicone compound has a formula weight of 3000 or less. A compound of Formula 3 with m=10, n=10 and R being a meth(acryloyl) group is a silicone resin with a formula weight of less than 3000 and a silicon content of about 28 wt% silicon. The reactive silicone (B) is present in the coating composition at 0.01 to 1 wt.% (Column 10, lines 1-7). This range overlaps the range of the instant claims.

Regarding claim 11, Hayashida '558 (Column 7, lines 33-45) teaches that the light-transmitting layer (8) can have a thickness of 50 to 300 microns. This range is fully encompassed by the range of the instant claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 6-8 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashida '558.

Regarding claim 1, Hayashida '558 (Column 4, lines 48-65) teaches an optical disk comprising a substrate layer (2) and a hard coat layer (9), which is the outermost layer of the disk. The hard coat layer is formed by coating and curing an actinic energy curing resin that comprises a reactive silicone (B) (Column 7, lines 54-63). Hayashida '558 (Column 9, lines 12-29) teaches that the reactive silicone can be one of formulas 1 to 3 and that it is preferred that the silicone compound has a formula weight of 3000 or less. A compound of Formula 3 with m=10, n=10 and R being a meth(acryloyl) group is a silicone resin with a formula weight of less than 3000 and a silicon content of about 28 wt% silicon. Hayashida '558 (Column 10, lines 1-18) teaches the weight percentages of the components of the coating composition for the hard coat layer. Hayashida '558 further teaches that the amount of the reactive silicone (B) can be varied in order to obtain a balance between lubricity and hardness of the hard coat layer. The weight percentages of the components overlap the ranges of the instant application. The coating thickness of the hard coat layer is taught in Column 11, lines 17 through 19 and overlaps the coating thickness of the instant application. Hayashida '558 does not explicitly teach the coating density of the silicone resin. However, it would be obvious to one of ordinary skill in the art to vary the amount of silicone resin in the compound, as taught by Hayashida '558, in order to balance the properties of lubricity and hardness of the hard coat layer.

Regarding claim 2, Hayashida '558 (Column 8, lines 10-20) teaches that the active energy ray-curable compound (C) can be a compound having (meth)acryloyl groups (ethylenically unsaturated groups). Several of the listed compounds have three or more ethylenically unsaturated groups.

Regarding claim 6, the silicone resin as described in claim 1, a compound of Formula 3 with m=10, n=10 and R being a meth(acryloyl) group, meets the limitations of the instant claim with Y being a methoxy group, p=20 and 25% of the methyl groups substituted with meth(acrylate) groups.

Regarding claim 7, Hayashida '558 (Column 10, lines 1-7) teaches that the coating composition can comprise an inorganic fine particle filler at 5 to 80 wt.% of the total coating compound. This range fully encompasses the range of the instant claim.

Regarding claim 8, the hard coat layer (9) is a single layer.

Regarding claim 12, Hayashida '558 (Column 4, lines 39-65) teaches an optical recording media, which is capable of reproducing an information signal. The optical recording medium comprises the following layers in this order: substrate layer (2), recording layer (5), light transmitting layer (8) and hard coat layer (9). The hard coat layer is formed by coating and curing an actinic energy curing resin that comprises a reactive silicone (B) (Column 7, lines 54-63).

Regarding claims 13 and 14, Hayashida '558 (Column 7, lines 33-45) teaches that the light-transmitting layer (8) can have a thickness of 50 to 300 microns and can be a polycarbonate sheet. Since the hard coat layer (9) is 0.5 to 5 microns thick

(Column 11, lines 17-19), this would make the light transmitting layer (base 8 and coating 9) 50.5 to 305 microns thick.

Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashida '558, in view of Chen et al. (US 6,551,710).

Regarding claim 3, as stated above Hayashida '558 teaches an article that meets the limitations of claim 1 and has a first curing resin having three or more ethylenically unsaturated groups. Hayashida '558 (Column 8, lines 39-41) further teaches that the active energy ray-curable compound (C) can be two different compounds. Other compounds can include epoxy acrylate (Column 8, lines 10-20). Hayashida '558 does not specify the epoxy acrylate to be used. Chen (Pages 12-15) teaches polymerizable comonomers which can be added to a coating composition for an optical articles such as a video disc (Column 1, lines 3-5). Chen (Column 12, lines 3-11) further teaches that when an epoxidized monomer or oligomer is included in the coating composition it improves curing characteristics and adhesion and that the oligomer can be trifunctional. This list of epoxidized monomers or oligomers includes glycidyl methacrylate (Compound 29, Column 16), which is an epoxy acrylate. A trimer of glycidyl methacrylate would have three ring-opening polymerizable groups. As a polymerized group, glycidal methacrylate would have more than three ring-opening polymerizable groups. The epoxidized component can be present in an amount from approximately 0.001 to 20 wt.% of the entire coating composition. It would be obvious to one of ordinary skill in the art to use the epoxidized oligomer of Chen, as the epoxy acrylate of

Hayashida '558, in order to improve curing characteristics and adhesion of the coating compound.

Regarding claim 4, Compound 29 of Chen (Column 16) meets the limitations of the instant claim, since it is the same as compound (E-1) of the instant application.

Regarding claim 5, epoxy groups are cationically polymerizable groups.

Claims 1, 2, 6-12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashida et al. (WO/2003/055679). The Examiner is using US 2005/0106404 (hereafter referred to as Hayashida '404) as the English language equivalent of the World document.

Regarding claim 1, Hayashida '404 (Paragraph 1) teaches a composite hard coat layer formed on the surface of an article. This composite layer is formed by coating an actinic energy-ray curing hard coat agent onto the surface of the article, coating an actinic energy-ray curing surface layer onto the hard coat agent and then curing both layers simultaneously to form the composite hard coat layer (Paragraphs 47-49). The surface portion of the layer can be formed from a silicone compound (Paragraph 67). A compound of Formula 3 with m=10, n=10 and R being a meth(acryloyl) group is a silicone resin with a silicon content of about 28 wt% silicon. The surface portion of the composite layer (Paragraph 76) can be from 1 to 100 nm thick and the thickness is determined by being thick enough to have anti-staining and lubricity properties, while being thin enough to benefit from the hardness of the lower portion of the composite layer. Hayashida '404 does not explicitly state the coating density of the silicon resin. It would be obvious to one of ordinary skill in the art to vary the thickness (which would

determine the coating amount of the silicone resin in the composite layer) in order to balance the properties of anti-staining and lubricity against coating hardness.

Regarding claim 2, Hayashida '404 (Paragraph 59) teaches that the actinic energy-ray curing hard coat agent can be a compound having (meth)acryloyl groups (ethylenically unsaturated groups). Several of the listed compounds have three or more ethylenically unsaturated groups.

Regarding claim 6, the silicone resin as described in claim 1, a compound of Formula 3 with m=10, n=10 and R being a meth(acryloyl) group, meets the limitations of the instant claim with Y being a methoxy group, p=20 and 25% of the methyl groups substituted with meth(acrylate) groups.

Regarding claim 7, Hayashida '404 (Paragraph 65) teaches that the hard coat agent portion of the composite layer can comprise 5 to 80 wt.% of an inorganic filler by weight of the hard coat agent. Since the hard coat portion of the composite layer is 1 to 10 microns thick (Paragraph 75), as opposed to the 1 to 100 nm thick silicone portion, the bulk of the coating composition weight is in the hard coat agent and thus the limitation of the instant claim would be met.

Regarding claim 8, since the two portions of the composite hard coat layer are each coated and then cured together, they will form a single composite layer, as there will be some intermixing of the two portions of the layer prior to curing.

Regarding claim 9, as stated above, Hayashida '404 teaches a silicon resin that has a silicon content of about 28 wt.%. Also as stated above, there will be some intermixing of the two coating resins of the composite hard coat layer prior to curing.

Thus, these two resins can be considered to be the curing composition. As stated above the silicone layer is 1 to 100 nm thick and the hard coat agent is 1 to 10 microns (1,000 to 10,000 nm) thick. Hayashida '404 does not explicitly state the weight percent of the silicon resin. However, the two layers would have similar densities and with the coating thicknesses given, the silicone resin weight percentage would meet the limitation of the instant claim.

Regarding claim 10, as stated above, the article has the structure as stated in the instant claim.

Regarding claim 11, Hayashida '404 (Paragraph 113) teaches there is a light transmitting layer (18) below the composite hard coat layer. This layer (18) can be considered as the base material for the composite hard coat layer. Hayashida '404 (Paragraph 117) teaches that the light transmitting layer can be 98 microns thick.

Regarding claims 12 and 15, Hayashida '404 (Paragraph 113) teaches an optical disk with the following layers in this order: a substrate layer (12), a phase-change recording material layer (15), and a light transmitting layer (18) which can be considered as the base material for the composite hard coat layer.

Regarding claim 14, Hayashida '404 (Paragraph 117) teaches that the light transmitting layer can be 98 microns thick.

Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashida '404, in view of Chen et al. (US 6,551,710).

Regarding claim 3, as stated above Hayashida '404 teaches an article that meets the limitations of claim 1 and has a first curing resin having three or more ethylenically

unsaturated groups. Hayashida '404 (Paragraph 62) further teaches that the energy-ray curing hard coat agent can be two different compounds. Other compounds can include epoxy acrylate (Paragraph 59). Hayashida '404 does not specify the epoxy acrylate to be used. Chen (Pages 12-15) teaches polymerizable comonomers which can be added to a coating composition for an optical articles such as a video disc (Column 1, lines 3-5). Chen (Column 12, lines 3-11) further teaches that when an epoxidized monomer or oligomer is included in the coating composition it improves curing characteristics and adhesion and that the oligomer can be trifunctional. This list of epoxidized monomers or oligomers includes glycidyl methacrylate (Compound 29, Column 16), which is an epoxy acrylate. A trimer of glycidyl methacrylate would have three ring-opening polymerizable groups. As a polymerized group, glycidal methacrylate would have more than three ring-opening polymerizable groups. The epoxidized component can be present in an amount from approximately 0.001 to 20 wt.% of the entire coating composition. It would be obvious to one of ordinary skill in the art to use the epoxidized oligomer of Chen, as the epoxy acrylate of Hayashida '404, in order to improve curing characteristics and adhesion of the coating compound

Regarding claim 4, Compound 29 of Chen (Column 16) meets the limitations of the instant claim, since it is the same as compound (E-1) of the instant application.

Regarding claim 5, epoxy groups are cationically polymerizable groups.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Robinson whose telephone number is 571-272-7129. The examiner can normally be reached on Monday- Friday 8 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ear

CAROL CHANEY
SUPERVISORY PATENT EXAMINER